

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

### FOR FURTHER ACTION See paragraph 2 below

International application No.  
PCT/B2004/003920

International filing date (day/month/year)  
30.11.2004

Priority date (day/month/year)  
09.12.2003

International Patent Classification (IPC) or both national classification and IPC  
H02M7/00

Applicant  
TOYOTA JIDOSHA KABUSHIKI KAISHA

#### 1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

#### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

#### 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**Box No. I Basis of the opinion**

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1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - a sequence listing
    - table(s) related to the sequence listing
  - b. format of material:
    - in written format
    - in computer readable form
  - c. time of filing/furnishing:
    - contained in the international application as filed.
    - filed together with the international application in computer readable form.
    - furnished subsequently to this Authority for the purposes of search.
3.  In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/IB2004/003920

**Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or  
industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	1-11
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-11
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-11
	No:	Claims	

**2. Citations and explanations**

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1 Reference is made to the following documents:**

D1 : US 4 562 390 A (TOBISE ET AL) 31 December 1985 (1985-12-31)

**2 Document D1, which is considered to represent the most relevant state of the art, discloses**

A power converter (see fig. 1) provided with a voltage conversion circuit (2) that receives an input voltage (output of Transformer (1)) and converts the input voltage into an operating voltage (V, output of voltage conversion circuit (2)) to be used to drive an electric load (M), and with a detection circuit (9, 12, 14) that detects an insulation resistance (R.) (column 2, line 55-59) on the output side of the voltage conversion circuit.

**2.1 From this, the subject-matter of independent claim 1 differs in that:**

a control circuit that determines a set value of the operating voltage and that sets the operating voltage at a time of degradation of the insulation resistance detected by the detection circuit lower than the operating voltage at a time of normal operation of the insulation resistance.

**2.2 The subject-matter of claim 1 is therefore novel (Article 33(2) PCT).**

The problem to be solved by the present invention may be regarded as:

to ensure a continuous operation of the electric load even at the time of degradation of the insulating resistance.

**2.3 In document D1 there is no mention how to believe in the event of insulating resistance**

deterioration and no mention to operate the voltage conversion circuit reducing the output voltage of the voltage conversion circuit. Document D1 teaches away from the subject-matter of claim 1, because the converter (2) is operated in a totally different way from the application and the DC electric motor (DC Motor) is disconnected from the power supply during the test period.

Therefore the solution to the problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT).

**2.3 Claims 2-11 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.**

### **3 INDUSTRIAL APPLICABILITY**

The present power converter of claim 1 finds an application in hybrid vehicle, therefore the industrial applicability of claim 1 is beyond any doubt.

Therefore independent claim 1 meets the requirements of Article 33(4) PCT.

Since remaining claims are dependent on claim 1 they also meet the requirements of Article 33(4) PCT.